## REMARKS

Claims 1-20 were rejected as obvious over Beguinot 5,645,794, or Beguinot 5,855,846. Claims 19-20 were rejected for a typographical error. The claims are amended. Reconsideration and allowance are respectfully requested.

### Claims 19-20

Claim 19-20 were rejected because "harness" was used instead of "hardness." The typographical error is corrected to make explicit that which was implicit, without narrowing the claim.

### Beguinot 5,645,794

**The Carbon Claim Limitation Is Not Met:**

Independent Claims 1, 3 and 13 each define an alloy having carbon of .16% to .2% by weight. The cited '794 patent has carbon of .24 to .35, which is outside the claimed range, but the Examiner nonetheless says it is close enough to establish a prima facie case of obviousness.

The '974 patent itself teaching teaches the criticality of this minimum amount (0.24%) of carbon. Indeed, the '794 patent teaches against any amount of carbon less than .24% by weight and thus teaches against the claimed lower value of .16% to .2% carbon defined in the patent claims. In particular, the '794 patent requires "**more** than 0.24% C." Col. 3, line 15. More than .24% carbon is required in order to obtain the hardness required for the '794 alloy:

> "**more** than 0.24% C in order to obtain, after quenching and tempering above 500°C, a hardness greater than 270 HB . . .." [Col. 3, lines 15-17].

Because "more" than 0.24% carbon is required, and because that requirement is essential to obtaining the required hardness, it is not obvious to modify the carbon in the '794 alloy to use less than .24% carbon as defined in the pending claims.

The criticality of using more than 0.24% carbon is reiterated in the discussion of thermal conductivity. Achieving a desired thermal conductivity is the only stated object

of the '794 patent. Col. 2, lines 24-30. To achieve this sole object of the invention, to achieve this thermal conductivity, it is "necessary" to use the specified amount of carbon:

> Finally, in order for the thermal conductivity to be high enough, it is **necessary** that:
>
> R=3.82(%**C**) + .... [Col. 4, lines 29-31 (emphasis added)].

Carbon of "more than 0.24%" is thus needed to achieve these required, "necessary" mathematical relationships, and the '794 patent thus teaches against using less than 0.24% C which would not maintain these mathematical relationships.

Because the '794 patent itself teaches against an alloy with less than 0.24% carbon, it is NOT obvious to modify the '794 patent and use a lower amount of carbon, an amount which the '794 patent says does not achieve the only object of the invention.

**The Magnesium Claim Limitation Is Not Met:**

Independent Claims 1, 3 and 13 also define magnesium of about .6% to .9% by weight, while the '794 patent requires from 1-2.5% magnesium. The magnesium is essential to obtain "a hardness greater than 270 HB." Col. 3, lines 15-17. This amount is also "necessary" to the careful balance of elements needed to achieve the desired thermal conductivity. Col. 4, lines 29-32 ("R = . . . + 3.34(% Mn) . . ."). That further teaches against the modification of the '974 alloy amounts and ratios.

The specified amounts of carbon and magnesium are essential to achieving the object of the '794 patented invention. It is not obvious to modify the amounts of carbon and magnesium in light of the '794 patent. Reconsideration and withdrawal of the rejections based on the '794 patent are respectfully.

**Additional Critical Elements Are Required By The '794 Patent**

Independent Claims 1, 3 and 13 define an alloy "consisting of" specified elements. The '794 patent defines further two essential elements excluded by Claims 1 and 13, namely up to .3% of vanadium, and .002% to .005% of boron. Col. 3, lines 48-54. The vanadium is needed to produce secondary hardening during tempering. Col. 3, lines 48-49. The boron is needed to increase the hardenability significantly without impairing other properties. Col. 3, lines 51-54. The '794 patent itself establishes the criticality of these elements.

Reconsideration and withdrawal of the rejections based on the '794 patent are respectfully.

**Beguinot 5,855,846**

**Additional Critical Elements Are Required By The '846 Patent**

Independent Claims 1, 3 and 13 define an alloy "consisting of" specified elements. The '846 patent defines further essential elements excluded by Claims 1 and 13, namely .002% to .015% of boron and molybdenum or tungsten. Col. 4, lines 57-58; Col. 5, lines 3-6. The '846 patent establishes the criticality of these added elements. In the '846 alloy, the boron is needed to increase the quenchability without increasing the difference in hardness between ZAH and the base metal. Col. 4, lines 61-63 , lines 51-54. In the '846 alloy, the molybdenum and tungsten are needed to enhance the effect of the boron. Col. 5, lines 7-9 ("the molybdenum and tungsten have a very favorable effect on quenchability, enhanced by an effect of synergism with boron"). The '846 patent itself thus establishes the criticality of these elements, elements excluded by the amended claims.

Reconsideration and withdrawal of the rejections based on the '794 patent are respectfully.

**Dependent Claims**

The dependent Claims 2, 4-12 and 14-20, contain the limitations of the independent claims, are believed allowable for the same reasons as the independent claims.

## CONCLUSION

The amended claims are believed to be in a condition for allowance, and such allowance is respectfully requested. If the Examiner believes that a discussion would resolve any remaining issues the Examiner is urged to contact the undersigned.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

Dated: 6/20/05

By: Lowell Anderson

Lowell Anderson
Registration No. 30,990
Stetina, Brunda, Garred & Brucker
75 Enterprise, Suite 250
Aliso Viejo, CA 92656
(949) 855-1246
(949) 855-6371 (fax)